

SH

Standard Series

- Endurance: 105°C 2000hours
- Recommended Applications :For high quality , reliability application, high CV product
- Corresponding product to RoHS

SH

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SK

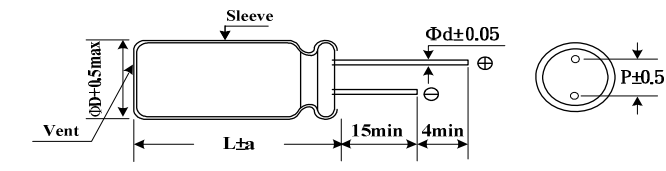
High Temperature



SPECIFICATIONS

Item	Characteristics										
Category Temperature Range	-40~+105℃				-25~+105℃				-25~+105℃		
Rated Voltage Range	6.3 ~ 100VDC				160 ~ 450VDC				500VDC		
Rated Capacitance Range	1~ 22000 μ F				1 ~ 470 μ F				2.2~82 μ F		
Capacitance Tolerance	± 20 % (120Hz , 20℃)				± 20 % (120Hz , 20℃)				± 20 % (120Hz , 20℃)		
Leakage Current (20℃)	I=0.01CV or 3(μ A)whichever is greater.				I=0.03CV+10(μ A)				I=0.04CV+100(uA)		
	(After rated voltage applied for 2 minutes)I : Max. leakage current (μ A), C : Nominal capacitance (μ F), V : Rated voltage (V)										
Dissipation Factor(MAX) (tan δ) (120Hz ,20℃)	WV	6.3	10	16	25	35	50	63~100	160~250	350~450	500
	tan δ	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.15	0.20	0.25
	When nominal capacitance is over 1000 μ F,tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F.										
Low Temperature Stability Impedance Ratio (MAX)	WV Z(120Hz)			6.3	10	16	25	35~100	160~250	350~450	500
				4	3	2	2	2	4	4	6
	Z-25℃ / Z+20℃			4	3	2	2	2	4	4	6
	Z-40℃ / Z+20℃			8	6	4	4	3	—	—	—
Endurance	After applying rated voltage for 2000 hours at 105℃ the capacitors shall meet the following requirements.										
	Capacitance change			Within ± 20% of initial value							
	D.F. (tan δ)			Not more than 200% of specified value							
	Leakage current			initial specified value or less							
Shelf Life	After leaving capacitors under no load at 105℃ for 1000 hours,the capacitors shall meet the same requirement as Endurance.										

Dimensions [mm]



ϕ D	5	6.3	8	10	13	16	18	22
p	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
ϕ d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

Multiplier for Ripple Current

Freq. (Hz)	120	300	1K	10K~100K
6.3 ~ 100V $\leq 68 \mu$ F	1.00	1.30	1.57	2.00
6.3 ~ 100V 100 ~ 470 μ F	1.00	1.23	1.34	1.50
6.3 ~ 100V 471 ~ 22000 μ F	1.00	1.10	1.13	1.15
160 ~ 450V all volume(μ F)	1.00	1.25	1.40	1.60
500V all volume(μ F)	1.00	1.05	1.10	1.15

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)
6.3 (8)	100	5x11	0.26	100	25 (32)	470	8x15	0.16	420
	150	5x11	0.26	120			10x12.5	0.16	440
	220	6.3x11	0.26	165		680	10x15	0.16	560
	330	6.3x11	0.26	200		1000	10x20	0.16	740
	470	6.3x11	0.26	230		1500	13x20	0.16	920
	680	8x11	0.26	350		2200	13x25	0.18	1230
	1000	8x15	0.26	445		3300	16x25	0.20	1500
		10x12.5	0.26	470		4700	16x32	0.22	1800
	1500	10x15	0.26	600		6800	18x36	0.26	2050
	2200	10x20	0.28	800	35 (44)	10	5x11	0.14	44
	3300	13x20	0.30	1100		15	5x11	0.14	50
	4700	13x20	0.32	1180		22	5x11	0.14	65
	6800	13x25	0.36	1490		33	5x11	0.14	85
	10000	16x32	0.44	1830		47	5x11	0.14	100
	15000	16x36	0.54	2090		68	6.3x11	0.14	130
	22000	18x40	0.68	2350		100	6.3x11	0.14	170
10 (13)	47	5x11	0.22	75		150	8x11	0.14	220
	68	5x11	0.22	80		220	10x12.5	0.14	315
	100	5x11	0.22	110		330	10x12.5	0.14	400
	150	5x11	0.22	120		470	10x15	0.14	480
	220	6.3x11	0.22	180		680	10x20	0.14	650
	330	6.3x11	0.22	235		1000	13x20	0.14	900
		8x11	0.22	255		1500	13x25	0.14	1050
	470	6.3x11	0.22	250		2200	16x25	0.16	1370
		8x11	0.22	305		3300	16x36	0.18	1680
	680	8x11	0.22	365		4700	18x36	0.20	1920
		10x12.5	0.22	420	50 (63)	1	5x11	0.12	12
	1000	8x15	0.22	480		2.2	5x11	0.12	18
		10x12.5	0.22	540		3.3	5x11	0.12	25
	1500	10x20	0.22	800		4.7	5x11	0.12	30
	2200	10x20	0.24	870		6.8	5x11	0.12	30
	3300	13x20	0.26	1100		10	5x11	0.12	50
	4700	13x25	0.28	1380		15	5x11	0.12	50
	6800	16x25	0.22	1700		22	5x11	0.12	75
	10000	16x36	0.40	1950		33	5x11	0.12	95
	15000	18x36	0.50	2180		47	6.3x11	0.12	115
16 (20)	33	5x11	0.18	70		68	8x11	0.12	159
	47	5x11	0.18	85		100	8x11	0.12	200
	68	5x11	0.18	100		150	10x12.5	0.12	289
	100	5x11	0.18	130		220	10x12.5	0.12	360
	150	6.3x11	0.18	175			10x15	0.12	415
	220	6.3x11	0.18	220		330	10x20	0.12	535
	330	8x11	0.18	280		470	10x20	0.12	630
	470	8x11	0.18	375			13x20	0.12	730
	680	8x15	0.18	450		680	13x20	0.12	800
		10x12.5	0.18	480		1000	13x25	0.12	1060
	1000	10x15	0.18	640		1500	16x25	0.12	1300
	1500	10x20	0.18	830		2200	16x36	0.14	1600
	2200	13x20	0.20	1050		3300	18x36	0.16	1780
	3300	13x25	0.22	1250	63 (79)	10	5x11	0.1	55
	4700	16x25	0.24	1650		15	5x11	0.1	65
	6800	16x32	0.28	1900		22	6.3x11	0.1	90
	10000	18x36	0.36	2070		33	6.3x11	0.1	100
25 (32)	22	5x11	0.16	60		47	8x11	0.1	155
	33	5x11	0.16	75		68	10x12.5	0.1	198
	47	5x11	0.16	90		100	10x12.5	0.10	260
	68	6.3x11	0.16	125		150	10x15	0.10	330
	100	6.3x11	0.16	145		220	10x20	0.10	465
	150	8x11	0.16	200		330	13x20	0.10	650
	220	8x11	0.16	240		470	13x20	0.10	700
	330	8x11	0.16	300		680	16x25	0.10	1000
		10x12.5	0.16	355		1000	16x32	0.10	1200

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Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)
63 (79)	1500	16x36	0.10	1450	350 (400)	3.3	8x11	0.20	35
	2200	18x36	0.12	1650		4.7	8x11	0.20	45
100 (125)	10	6.3x11	0.10	65		10	10x15	0.20	80
	15	6.3x11	0.10	75		22	13x20	0.20	150
	22	8x11	0.10	115		33	13x25	0.20	200
	33	8x11	0.10	140		47	16x25	0.20	260
	47	10x12.5	0.10	185		100	18x32	0.20	400
	68	10x15	0.10	240	400 (450)	1	6.3x11	0.20	17
	100	10x20	0.10	305		2.2	8x11	0.20	31
	150	13x20	0.10	370		3.3	8x11	0.20	35
	220	13x25	0.10	520		4.7	8x11	0.20	45
	330	16x25	0.10	720			10x12.5	0.20	55
	470	16x32	0.10	875		6.8	8x15	0.20	60
	680	16x36	0.10	1200			10x12.5	0.20	65
160 (200)	1	5x11	0.15	17		10	10x15	0.2	80
	2.2	6.3x11	0.15	25		15	10x20	0.2	100
	3.3	6.3x11	0.15	36		22	13x20	0.2	150
	4.7	6.3x11	0.15	43		33	13x25	0.2	200
	6.8	8x11	0.15	54		47	16x25	0.2	265
	10	8x11	0.15	70		68	16x32	0.2	410
	15	10x12.5	0.15	90			18x25	0.2	390
	22	10x15	0.15	115		100	18x32	0.2	500
	33	10x20	0.15	160		120	18x32	0.2	520
	47	10x20	0.15	195			18x36	0.2	550
	68	13x20	0.15	255		150	18x40	0.2	620
	100	13x25	0.15	350	420 (470)	1	6.3x11	0.2	17
	150	16x25	0.15	435		2.2	8x11	0.2	29
	220	16x32	0.15	550		3.3	8x11	0.2	34
	330	18x36	0.15	800		4.7	10x12.5	0.2	55
	470	18x40	0.15	900		6.8	10x15	0.2	68
200 (250)	1	6.3x11	0.15	17		10	10x20	0.20	98
	2.2	6.3x11	0.15	25		15	13x20	0.20	130
	3.3	6.3x11	0.15	36		22	13x25	0.20	155
	4.7	8x11	0.15	50		33	16x25	0.20	205
	6.8	8x11	0.15	60		47	16x25	0.20	235
	10	10x12.5	0.15	80		68	16x32	0.20	400
	15	10x15	0.15	110			18x25	0.20	380
	22	10x20	0.15	140		100	18x36	0.20	490
	33	13x20	0.15	200		120	18x40	0.20	530
	47	13x20	0.15	220		150	18x45	0.20	570
	68	13x25	0.15	280	450 (500)	1.0	6.3x11	0.20	18
	100	16x25	0.15	350			8x11	0.20	22
	150	16x32	0.15	480		2.2	8x11	0.20	30
	220	16x36	0.15	675			10x12.5	0.20	37
		18x32	0.15	685		3.3	8x15	0.20	42
	330	18x36	0.15	750			10x12.5	0.20	40
250 (300)	1	6.3x11	0.15	17		4.7	10x12.5	0.20	52
	2.2	6.3x11	0.15	29		6.8	10x15	0.20	62
	3.3	8x11	0.15	42		10	10x20	0.20	85
	4.7	8x11	0.15	52		15	13x20	0.20	120
	6.8	8x11	0.15	62		22	13x25	0.20	150
	10	10x12.5	0.15	80		33	16x25	0.20	210
	15	10x15	0.15	110		47	16x25	0.20	260
	22	10x20	0.15	140		68	18x32	0.20	370
	33	13x20	0.15	200		100	18x36	0.20	495
	47	13x25	0.15	240		120	18x40	0.20	565
	68	13x25	0.15	290		150	18x45	0.20	650
	100	16x25	0.15	380	500 (550)	2.2	8x11	0.25	25
	150	16x32	0.15	420		3.3	8x16	0.25	30
	220	18x36	0.15	680		4.7	8x16	0.25	34
	350 (400)	1	6.3x11	0.20			10x12.5	0.25	38
		2.2	8x11	0.20		6.8	10x16	0.25	50

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Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D $\times$ L(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)
500 (550)	8.2	10x20	0.25	65
	10	10x20	0.25	70
		13x20	0.25	85
	15	13x25	0.25	100
	22	13x25	0.25	115
		16x25	0.25	130

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D $\times$ L(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)
500 (550)	33	18x25	0.25	180
	47	16x32	0.25	180
		18x30	0.25	230
	68	18x32	0.25	250
		18x36	0.25	290
	82	18x40	0.25	335